

What is claimed is:

- 1 1. A radio receiver comprising:
2 at least one amplifier to receive radio signals; and
3 a control circuit coupled to the at least one amplifier, wherein the control circuit
4 adjusts the operation of the at least one amplifier based on the received radio signals.
- 1 2. The radio receiver of claim 1, wherein the at least one amplifier is a LNA
2 to receive a RF signal and produce an amplified signal that is coupled to a down-
3 converting mixer that produces a mixer output, and the control circuit comprises:
4 a peak detector coupled to receive the mixer output to produce a peak signal;
5 an integrator coupled to the peak detector to receive the peak signal and produce
6 an integrated signal;
7 a mixer coupled to receive the integrated signal and a transmit power indicator to
8 produce a current control signal that is coupled to the LNA to control a bias current of the
9 LNA, wherein cross modulation associated with the received RF signal is reduced.
- 1 3. The radio receiver of claim 2, further comprising a second mixer coupled
2 to the output of the integrator and a receiver gain control signal to produce a VCO current
3 control signal that is coupled to a VCO associated with a PLL that drives the down-
4 converting mixer, wherein reciprocal mixing associated with the received RF signal is
5 reduced by adjustment of the VCO associated with the PLL.
- 1 4. An adaptive system for use with a radio receiver to adapt to interfering
2 signals associated with a received RF signal, the radio receiver includes a LNA to receive
3 the RF signal and produce an amplified signal that is coupled to a down-converting mixer
4 that produces a mixer output, the adaptive system comprises:
5 a peak detector coupled to receive the mixer output to produce a peak signal;
6 an integrator coupled to the peak detector to receive the peak signal and produce
7 an integrated signal; and
8 a mixer coupled to receive the integrated signal and a transmit power indicator to
9 produce a current control signal that is coupled to the LNA to control a bias current of the

10 LNA, wherein cross modulation associated with the received RF signal is reduced.

1 5. The adaptive system of claim 4, further comprising a filter coupled to
2 receive the mixer output and produce a filtered output that is coupled to the peak detector.

1 6. The adaptive system of claim 4, further comprising a LNA control circuit
2 coupled to the mixer to receive the current control signal and produce a LNA control
3 signal that is coupled to the LNA to control a bias current of the LNA, wherein cross
4 modulation associated with the received RF signal is reduced.

1 7. The adaptive system of claim 4, further comprising a second mixer
2 coupled to the output of the integrator and a receiver gain control signal to produce a
3 VCO current control signal that is coupled to a VCO associated with a PLL that drives
4 the down-converting mixer, wherein reciprocal mixing associated with the received RF
5 signal is reduced by adjustment of the VCO associated with the PLL.

1 8. The adaptive system of claim 7, wherein the VCO control current is
2 coupled to the VCO associated with the PLL via a VCO control circuit.

1 9. The adaptive system of claim 4, further comprising a buffer coupled
2 between the mixer output and a non-linear element.

1 10. The adaptive system of claim 9, wherein the non-linear element comprises
2 a diode element.

1 11. The adaptive system of claim 9, further comprising:
2 an second integrator coupled to the non-linear element and the buffer to produce a
3 second integrator output; and
4 a third mixer coupled to receive the second integrator output and a receiver power
5 indicator to produce a receive control signal.

1 12. The adaptive system of claim 11, wherein the receive control signal is
2 coupled to a receive control circuit, and wherein an output of the receive control circuit is
3 coupled to the down-converting mixer to adjust the down-converting mixer to reduce
4 intermodulation distortion.

1 13. A method for providing an adaptive system for use with a radio receiver to
2 adapt to interfering signals associated with a received RF signal, the radio receiver
3 includes an LNA to receive the RF signal and produce an amplified signal that is coupled
4 to a down-converting mixer that produces a mixer output, the method comprising steps
5 of:

6 deriving a peak signal from the mixer output;
7 integrating the peak signal to produce an integrated signal;
8 mixing the integrated signal and a transmit power indicator to produce a current
9 control signal; and
10 controlling a bias current of the LNA with the current control signal, wherein
11 cross modulation associated with the received RF signal is reduced.

1 14. The method of claim 13, wherein the step of mixing is a step of:
2 mixing the integrated signal and a receive power indicator to produce a VCO
3 control signal; and
4 the step of controlling is a step of:
5 controlling a VCO based on the VCO control signal, wherein the VCO is
6 associated with a PLL coupled to the down-converting mixer, and wherein reciprocal
7 mixing associated with the received RF signal is reduced by adjustment of the VCO
8 associated with the PLL

1 15. The method of claim 13, wherein the step of mixing is a step of:
2 mixing the integrated signal and a receive power indicator to produce a receive
3 control signal; and
4 the step of controlling is a step of:
5 controlling the down-converting mixer based on the receive control signal,
6 wherein intermodulation distortion associated with the received RF signal is reduced.
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